

WHAT IS CLAIMED IS:

1. A scanning microscope for using a probe to observe a surface of a sample, comprising:

a probe arranged in the vicinity of a surface of a sample;  
a cantilever for supporting the probe;

5 a scanning unit for relatively scanning the probe and the sample; and

a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10 the scanning unit including:

a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a position in the vicinity of the center in dimension or the center of gravity thereof;

a second actuator for moving the object along a second axis different from the first axis; and

20 a third actuator for moving the object along a third axis different from both the first axis and the second axis,

the second actuator and the third actuator comprising a common cylindrical piezoelectric actuator.

2. A scanning microscope for using a probe to observe a surface of a sample, comprising:

a probe arranged in the vicinity of a surface of a sample;  
a cantilever for supporting the probe;

5 a scanning unit for relatively scanning the probe and the sample; and

a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10       the scanning unit including:

      a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a  
15       position in the vicinity of the center in dimension or the center of gravity thereof;

      a movable member for holding the first actuator;

      a second actuator for moving the movable member along a second axis different from the first axis;

20       a third actuator for moving the movable member along a third axis different from both the first axis and the second axis; and

      a guide mechanism for restricting movement of the movable member along the first axis.

3. A scanning microscope for using a probe to observe a surface of a sample, comprising:

      a probe arranged in the vicinity of a surface of a sample;

      a cantilever for supporting the probe;

5       a scanning unit for relatively scanning the probe and the sample; and

      a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10       the scanning unit including:

      a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a

15 position in the vicinity of the center in dimension or the center  
of gravity thereof;

16       a second actuator for moving the object along a second axis  
different from the first axis, the second actuator having a pair  
of end portions, one of the end portions being connected to the  
20 first actuator;

21       a movable member for supporting the second actuator;

22       a third actuator for moving the object along a third axis  
different from both the first axis and the second axis, the third  
actuator having a pair of end portions, one of the end portions  
25 being connected to a movable member to support the movable  
member, the other one of the end portions being fixed; and

26       a guide mechanism for restricting movement of the movable  
member along the first axis.